



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#14
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11-8-95

Docket No. 26.2.965/USA

In re Application of:

Steve A. Sallstrom et al.

Serial No. 08/192,022

Filed February 3, 1994

For ALL WHEEL HYDRAULIC
DRIVE SYSTEM

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) Group Art Unit 3501
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) Examiner T. Melius
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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
WITH CERTIFICATION

The Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, the Applicants wish to bring the prior art references listed on the attached Form PTO-1449 to the attention of the Patent and Trademark Office. These references were cited in an international search report conducted by the European Patent Office in a corresponding PCT application designating various foreign countries. The search report is dated July 14, 1995.

A concise explanation of the relevance of the references is additionally provided as follows:

French Patent 2,670,441 to Microvoirie discloses a hydraulically driven vehicle having a pair of front wheels

driven by a pair of front wheel drive motors 11 and a pair of rear wheels driven by a pair of rear wheel drive motors 12. The pair of front wheel drive motors 11 are connected to one another in parallel. The pair of rear wheel drive motors 12 are also connected to one another in parallel. The pair of rear wheel drive motors 12 are connected in series to the pair of front wheel drive motors 11 by the valves 5 and 6.

The primary thrust of this patent appears to be directed to a system for automatically shutting off the drive to the rear wheel drive motors 12 when the steering wheel is turned by more than a certain amount. Thus, the vehicle is automatically converted from four wheel drive to two wheel drive without operator intervention in accordance with whether or not the vehicle is being turned by more than a predetermined amount. Fig. 1 illustrates the hydraulic fluid supply system in its four wheel drive mode. Fig. 2 illustrates the hydraulic fluid supply system in its two wheel drive mode.

An English language translation of the text of this patent, and an English language Dialog record including a translation of the abstract of the patent, is attached to the copy of the French patent.

German Patent 1,555,065 to Clark Equipment discloses a hydraulically driven vehicle having individual wheel drive motors on each drive wheel of the vehicle. Fig. 5 discloses a two wheel drive configuration and Fig. 1 discloses a four wheel drive configuration. Regardless of which configuration is at issue, the wheel drive motors are all serially connected to one another and to the pump 62 or 62' such that the entire fluid flow of the pump passes through each motor. To provide a differential action without having

to use valving of some type, this patent discloses pivoting the wheel drive motors during cornering as the steering wheel is turned.

An English language Dialog record including a translation of the abstract of the patent is attached to the copy of the German patent.

British Patent 791,903 to Rover discloses a hydraulically driven vehicle having individual wheel drive motors e on the front wheels of the vehicle with the rear wheels being driven through a variable speed gear box c and what appears to be a differential. In Fig. 1, the front wheel drive motors e are serially connected to each other and to the pump. In Fig. 2, the front wheel drive motors e are connected in parallel to the pump.

In the Fig. 1 embodiment comprising the serially connected drive motors e, a differential action is provided by the pipe i and valve j. See Page 1 of the British patent, Lines 40-45.

European Patent 324,970 to Deere discloses a lawn mower having a tricycle configuration with two front wheels 14 and 16 and a rear wheel 18. The lawn mower includes a rear mounted engine over the rear wheel 18. Three cutting units are carried on the mower in a staggered configuration. Two of the cutting units are in front of the front wheels 14 and 16 and one cutting unit is mounted generally in advance of the rear wheel 18. The drive system for the front and rear wheels 14, 16 and 18 does not appear to be specifically set forth or of interest in this patent.

An English language Dialog record including a translation of the abstract of the patent is attached to the copy of the European patent.

U.S. Patent 4,180,138 to Shea shows an internal combustion engine 20 driving the front wheels 27 of an automotive type vehicle through a differential 24. The rear wheels 37 are powered in a supplementary fashion by a separate auxiliary motor 40 which may be a hydraulic pump/motor (See the Abstract). A mechanical overrunning clutch couples each end of the rear axle shaft to one of the rear drive wheels. See Fig. 3 of Shea and Col. 4 of Shea, Lines 10-33. This avoids the necessity of "differential gearing". See Col. 4 of Shea, Lines 55-58. The auxiliary motor 40 is manually put into operation by the operator and is automatically disengaged when the motor 40 reaches a certain speed.

U.S. Patents 4,199,923 to Blake, 4,864,805 to Hager et al., and 5,042,236 to Lamusga et al. are all directed to mowers of various types having cutting units that engage the ground. These patents do not appear to teach with any detail which wheels in these vehicles are driven or specifically how such wheels are driven.

Enclosed herewith are copies of all of the references discussed herein and cited on the attached Form PTO-1449.

The summaries of the references provided herein are for the Examiner's convenience only. The Examiner should also thoroughly review each reference to independently determine its relevance. It is believed that the claims of the present application are allowable over the cited prior art.



Respectfully submitted,

October 5, 1995

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CERTIFICATION UNDER 37 CFR 1.97(e)

I hereby certify that each item of information in this SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT.

October 5, 1995

James W. Miller

Certificate under 37 C.F.R. 1.8. I hereby certify that this Supplemental Information Disclosure Statement and all papers described in or accompanying this document are being deposited with the U.S. Postal Service, as First Class Mail, in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on October 5, 1995.